



Introduction: Science journalism in a digital age

Journalism

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Sifting through pronouncements on the challenges facing science journalism, one encounters a diverse array of impassioned views, not least those expressed by science writers and journalists themselves. Ben Goldacre (2009), a medical doctor and science blogger (who also writes a weekly column for *The Guardian*), offers a provocative assessment worthy of quotation at length:

The people who run the media are humanities graduates with little understanding of science, who wear their ignorance as a badge of honour. Secretly, deep down, perhaps they resent the fact that they have denied themselves access to the most significant developments in the history of Western thought from the past 200 years; but there is an attack implicit in all media coverage of science: in their choice of stories, and the way they cover them, the media create a parody of science. On this template, science is portrayed as groundless, incomprehensible, didactic truth statements from scientists, who themselves are socially powerful, arbitrary, unelected authority figures. They are detached from reality; they do work that is either whacky or dangerous, but either way, everything in science is tenuous, contradictory, probably going to change soon and, most ridiculously, 'hard to understand.' Having created this parody, the commentariat then attack it, as if they were genuinely critiquing what science is all about. (2009: 207-8)

The reason why so few science stories present scientific evidence, Goldacre contends, is due to the journalistic assumption that audiences will fail to understand the 'science bit'. This means that stories must be effectively 'dumbed down' in what amounts to 'a desperate bid to seduce and engage the ignorant, who are not interested in science anyway'. While acknowledging there are occasions when these impulses are well intentioned – such as when specialist science reporters strive to help democratize science by simplifying it – in the main, he insists, the media have consistently 'failed science so spectacularly' because editors have a cynical preference for 'stupid stories' that sell.

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While Goldacre's polemical stance invites lively discussion, the issues he raises – such as journalists' personal knowledge about science, the news values informing story selection, the representation of both science and scientists, journalistic perceptions of audiences, market pressures shaping coverage, and so forth – have figured prominently in scholarly assessments of science journalism. In recent years, researchers have sought to move beyond broad assertions about the role of the media in 'the public understanding of science' in order to delve more deeply into the factors influencing what gets reported, how and why. To a large degree, traditional beliefs about science communication, typically described in terms of a deficit-model (top-down, zero-sum) of media effectivity, have been recast in favour of more nuanced treatments of attendant complexities. Blaming journalists for failing to promote the benefits of science in the interest of garnering public approval and support is to overlook the obvious, namely that few journalists regard it as their responsibility to perform this duty in the first place. Related criticisms that they are to be held culpable for perpetuating 'scientific illiteracy' amongst 'lay' publics are similarly wide of the mark. Journalists tend to be uncomfortable with the idea that they should be educating audiences, preferring instead to focus on informational relay in accordance with professional norms of impartiality, fairness and balance. Science is of interest to them, it follows, to the extent that it is newsworthy.

And there's the rub. When science attracts news headlines it is usually because of its potential application in 'gee-whiz' techno-innovations or health-care breakthroughs, or due to its enmeshment in disputes being waged between rival stakeholders intent on framing its economic, political or cultural implications in their preferred terms. Scientists themselves are increasingly being called upon to openly explain – and, if necessary, defend – their research, to actively appeal to the 'value predispositions' (Nisbet and Mooney, 2007) necessary for broader support in anticipation of concerted efforts to re-define its significance. In the USA, a promise made by President Barack Obama (2009) in his Inaugural Address to 'restore science to its rightful place' was widely interpreted as a response to the sharp politicization of issues such as climate change, human embryonic stem cell research, even Darwinian evolution. In the years since, however, conflicts have been exacerbated by what a *Nature* (2010) editorial aptly characterized as a 'growing anti-science streak on the American right', that is, a 'right-wing populism that is flourishing in the current climate of economic insecurity'. Scientists may feel compelled to join the fray when the alternative is to watch evidence-based debate effectively drowned out by fierce clashes over 'values', but to do so is to risk having their hard-won expertise and credibility publicly contested.

Similar tensions are played out in other national contexts as well, of course, with scientists being forced to respond to the selective inflection of their findings by those pursuing specific agendas (see Diethelm and McKee, 2009; Geller et al., 2005; Gething, 2003; Ladle et al., 2005; Nielsen et al., 2007; Petersen et al., 2009). In February 2011 the UK government's Chief Scientific Adviser John Beddington made public his call to fellow scientists to take issue with the 'pernicious influence' of 'pseudoscience' peddled by some religious or political groups. He declared:

We are grossly intolerant, and properly so, of racism. We are grossly intolerant, and properly so, of people who [are] anti-homosexuality. We are not – and I genuinely think we should think

about how we do this – grossly intolerant of pseudo-science, the building up of what purports to be science by the cherry-picking of the facts and the failure to use scientific evidence and the failure to use scientific method. (Cited in Dwyer and Hood, 2011)

These remarks, made in an off-the-cuff manner at the end of a speech to science and engineering civil servants, sparked considerable comment in the blogosphere. Prompted to write a follow-up article in *New Scientist*, Beddington (2011) further elaborated his stance. ‘It is time the scientific community became proactive in challenging misuse of scientific evidence,’ he argued. ‘We must make evidence, and associated uncertainties, accessible and explicable. In a world of global communication, we cannot afford to only speak to ourselves’ (see also Boyce and Lewis, 2009; Jensen, 2010; Kitlinger and Williams, 2005; Lester, 2010; Priest, 2009).

A prominent feature of criticisms concerning this misuse of science revolves around the perceived shortcomings of journalistic scrutiny, such as where news reports present opposing views without appraising the evidence behind them (Beddington having suggested reporters tend to treat discussions of scientific events as if they were ‘football matches’). When set in the context of the larger crisis confronting news organizations struggling to re-profile their news provision in order to survive, let alone prosper in a digital era, these criticisms become all the more acute. At a time when many newsrooms are under intense financial pressure to trim expenditure on specialist, investigative reporting, it is all too often the case that science news is regarded as expendable. In the eyes of some, it is a luxury increasingly difficult to justify when certain other types of news will be both cheaper to produce and more popular with audiences (and thus advertisers).

CNN’s decision to cut its entire science, technology and environment news staff provoked widespread alarm when it was announced in 2008, but equally contentious moves by other organizations – duly defended in managerial accounts stressing ‘efficiency gains’, ‘multi-skilling’, ‘repurposing’, ‘convergence synergies’ and related priorities – have eluded a similar degree of public attention (see also Allan, 2009; Bauer and Bucchi, 2007; Chalmers, 2007; Holliman et al., 2009; Mandavilli, 2011; Riesch, 2010; Trench, 2009). Compounding these changes in the political economy of science journalism are further constraints at the reportorial level, including the ‘hype/space dilemma’, whereby journalists ‘hype’ dramatic new findings of a scientific study in order to secure a news story the necessary ‘space’ for inclusion (Condit, 2004; Wilcox, 2003), the impact of ‘churnalism’ signalling an over-reliance on PR press releases in the guise of news (Davies, 2008), and the embargo system enforced by elite scholarly journals (Kiernan, 2006), amongst a myriad of imperatives demanding constant renegotiation. The very integrity of science reporting risks being compromised, many fear, when the necessary time, commitment and resources are in such short supply in so many newsrooms.

It is against this backdrop that we discern the reasons why this special issue on ‘Science Journalism in a Digital Age’ is informed by a sense of urgency to intervene in current debates. Pessimistic denunciations regarding the decline – if not outright death – of inquisitive, vigorous science reporting worthy of the name are being readily countered by triumphalist assertions about the promise of new technologies to usher in creative reinvention on a grand scale. More helpfully, voices can be heard that resist the pull of these stark polarities, with some acknowledging that while the situation is grim there is good

reason to be cautiously confident that science journalism can be sustained, even enriched, so long as new forms of connectivity are developed to advantage.

The more upbeat assessments recurrently point to the opportunities the internet affords journalists to facilitate public engagement with science, with the proliferation of informational networks encouraging greater dialogue, transparency and trust. Conventional journalist–source dynamics are being recast, perhaps most notably in the blogosphere where some science bloggers subject news stories to interrogation for accuracy’s sake, while others partake in journalistic activity of their own, often motivated by the desire to cultivate a more open culture for scientific discourses. A study conducted by the Research Information Network (RIN) into the use of new media by scientific researchers in the UK found that 12 per cent of respondents wrote blogs at least occasionally, with over one in five commenting on blogs (RIN, 2010; see also Williams and Clifford, 2009). ‘Similar to the circulation of “erudite letters” of earlier centuries through geographically far-reaching scientific networks,’ Michelle Francl (2011) observes, ‘blogs make widely available – and, more crucially, searchable – expert critiques to scientific networks’ (see also Allgaier, 2010). To the extent that web-savvy journalists tap into these networks, they will be rewarded with what can be remarkably perceptive insights to supplement their reporting. *Nature*’s (2009) survey of 493 science journalists employed by the mainstream media in several countries around the globe reported that 63 per cent of those surveyed had found stories on a scientist’s blog (33% doing so on a regular basis), compared with 18 per cent five years earlier, when 4 per cent did so regularly (see Brumfiel, 2009). Still, tempering this optimism about the expansion of science journalism courtesy of digital media are commentators such as Cristine Russell (2009) of Harvard University’s Belfer Center for Science and International Affairs:

While these new tools – blogs, podcasts, Skype, Facebook, YouTube, and Twitter – offer creative outlets, mindless chatter can gobble up precious time. Countless new Web sites provide a dizzying array of science information, misinformation, and commentary that can be hard to sort through. These sites also run the risk of preaching to the converted and subdividing the audience in ways that may narrow the science knowledge base and reinforce uninformed opinion. (Russell, 2009: 1491)

As she proceeds to point out, in order to make the most of this changing media landscape, further efforts must be made to explore ways to educate journalists, scientists, and other communicators in the craft of science reporting. ‘In doing so,’ she adds, ‘it is crucial that the old-fashioned virtues of good journalism – accurate information, multiple sources, context over controversy, and editorial independence – not be lost in the enthusiasm for communicating content in novel ways’ (2009: 1491; see also Hansen, 2011; Hermida, 2010).

This special issue of *Journalism* seeks to examine the varied, uneven ways in which this emergent ecology of science journalism is evolving with a view to promoting fresh perspectives regarding how its qualities may be improved. The demands placed upon the science journalist have always been formidable, of course, but as this Introduction has sought to highlight, the internet and associated digital technologies are bringing to bear new pressures and contingencies – while simultaneously fostering innovative alternatives – deserving of close, critical investigation. A guiding theme informing the ensuing

discussion is that academic research can help to identify productive ways forward in rethinking science journalism's changing forms, practices and epistemologies within these diverse informational environments.

In the first article, Declan Fahy and Matthew C. Nisbet offer a map of this shifting terrain. Their evaluative appraisal of key themes in the research literature concerned with online science journalism provides a basis to develop a typology of journalistic roles, which they then proceed to assess in relation to findings drawn from interviews conducted with science reporters and writers in the USA and UK. António Granado's study draws on an online survey and interviews with European science journalists in 14 different countries in order to identify a range of important issues concerning how the internet is transforming the production of science news. His findings highlight deep-rooted tensions, with reportorial gains often offset by drawbacks which threaten to undermine the integrity of independent, investigative science journalism. The next article, co-authored by David M. Secko, Stephany Tlalka, Morgan Dunlop, Ami Kingdon and Elyse Amend, focuses our attention on how science journalists' interactions with their audiences are evolving in online contexts. They provide a narrative analysis of the online health and science sections of Canada's *Globe and Mail* website, unravelling a number of factors shaping the ways in which contributions from the site's users extend, elaborate and even reframe the priorities of news reporting.

Richard Holliman's study examines how 'climategate' became science news, that is, how the leaking of email correspondence, data and documents from the Climatic Research Unit at the University of East Anglia in the UK ignited a major controversy. Of particular interest is the way in which the credibility of high-profile climate scientists was called into question in the ensuing news coverage, with ardent voices – not least those in the blogosphere – actively seeking to disrupt scientific consensus in the hope of derailing political initiatives intended to address anthropogenic global warming. Further dimensions of the ways in which new media influence public discussion of science-related issues are illuminated by Esther Laslo, Ayelet Baram-Tsabari and Bruce V. Lewenstein's enquiry into the news reporting of research studies concerned with animal experimentation on a popular daily news website in Israel. Their analysis of news items and reader comments enables them to pinpoint features of the relationship between what they term media frames and audience frames, with far-reaching implications for public perceptions of the ethical dilemmas posed by science.

Retaining the focus on audience-oriented research, Kerstin Artz and Holger Wormer provide a content analysis of questions posed by members of the public to the editors responsible for science journalism in three different German media outlets; specifically, letters and emails sent to the weekly newspaper *Die Zeit*, contributions to an online web forum hosted by a radio station (iLive), and emails sent to a television programme broadcast by *Westdeutscher Rundfunk*. Particular attention is devoted to the news values operationalized in science journalism as they are perceived from users' perspectives. The science blog is centred for scrutiny in Vinciane Colson's contribution. She reports on a series of interviews with science journalists in Belgium and France, drawing out the criteria they employ when evaluating the credibility of science blogs. Next, she interviews science bloggers in order to learn more about their motivations to blog, not least the extent to which they regard themselves as playing a vital role in furthering the aims of science

journalism. Rounding out the discussion is Marie-Claire Shanahan's analysis of the relative affordances of the journalistic science blog, that is, the drawing and redrawing of boundaries between science communicators, researchers, non-scientists and other readers. The blog *Not Exactly Rocket Science* serves as the basis for a case study that considers the types of interaction being facilitated and their larger import for different kinds of collaborative relationships – such as between a scientist and a farmer – that may be engendered.

All in all, it is hoped that this special issue will contribute to the formalization of this area of enquiry, not least by serving as a catalyst to encourage further exploration, analysis and critique.

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